

INTERNATIONAL SEARCH REPORT

Inter I Application No
PCT/IB 03/02541

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B01J20/18 B01D53/04 B01J20/34 B01D15/00 C10G25/05

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B01J B01D C10G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 511 885 A (CECA SA) 4 November 1992 (1992-11-04) page 2, line 48 page 2, line 33 - line 53 -----	1,3,4,8, 13-16
A	WO 00/71249 A (ZEOCHEM) 30 November 2000 (2000-11-30) page 17, line 14 - line 16 page 16, line 25 - page 17, line 2 page 16, line 3 - line 24 -----	1-4, 13-16
A	US 6 096 194 A (TSYBULEVSKIY ALBERT M ET AL) 1 August 2000 (2000-08-01) column 6, line 7 - line 16 ----- -/--	1-7, 13-15

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *G* document member of the same patent family

Date of the actual completion of the international search

13 April 2004

Date of mailing of the international search report

28. 04. 2004

Name and mailing address of the ISA

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 057 473 A (VOECKS GERALD E ET AL) 15 October 1991 (1991-10-15) column 4, line 1 - line 35 column 5, line 25 -----	1,13,14
A	DATABASE WPI Section Ch, Week 198731 Derwent Publications Ltd., London, GB; Class H01, AN 1987-220075 XP002265291 & SU 1 274 746 A (NATURAL GAS PROC IN) 7 December 1986 (1986-12-07) abstract -----	1,13,14, 17,24
A	DATABASE WPI Section Ch, Week 200067 Derwent Publications Ltd., London, GB; Class H04, AN 2000-687626 XP002265292 & WO 00/67898 A (LIN K) 16 November 2000 (2000-11-16) abstract -----	1,13,14
A	US 6 103 949 A (VIERHEILIG ALBERT A ET AL) 15 August 2000 (2000-08-15) column 9, line 5 - line 19 column 8, line 7 - line 45 column 7, line 20 - line 27 -----	1,10,13
A	US 6 264 881 B1 (D. PLEE) 24 July 2001 (2001-07-24) column 3, line 50 - line 65 -----	1,3-9,13
A	WO 96/03199 A (CECA S.A.) 8 February 1996 (1996-02-08) page 2, line 1 - line 10 page 1, line 33 - line 36 page 3, line 19 - line 22 -----	1
A	LANGMUIR, vol. 15, no. 18, 1999, - 25 February 1999 (1999-02-25) pages 5781-5784, XP002265290 page 5783, right-hand column, last paragraph page 5784; figure 4 -----	
A	DE 37 05 624 A (BAYER AG) 1 September 1988 (1988-09-01) claims 1,2 -----	1
X	US 4 404 118 A (L.E. HERSKOVITS) 13 September 1983 (1983-09-13) column 5, line 32 column 6, line 30 - line 33 column 4, line 55 - line 64 -----	17,21, 24,25
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DATABASE WPI Section Ch, Week 199133 Derwent Publications Ltd., London, GB; Class H01, AN 1991-244298 XP002276682 & SU 1 611 859 A (VOLGO-URAL HYDROGEN) 7 December 1990 (1990-12-07) abstract</p>	17-20
A	<p>US 4 098 684 A (R.A INNES) 4 July 1978 (1978-07-04) column 4, line 41 - line 49 column 3, line 15 - line 21</p>	17, 24, 25

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Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-12,13,14-16

A process to produce a formed zeolite for adsorption purposes with improved adsorption and desorption properties. A zeolitic adsorption compound obtainable according to this process.

A process to remove by adsorption one or more low molecular weight organic sulfur compounds from a gaseous or liquid stream, wherein the feed stream is passed through a bed of formed zeolitic molecular sieve.

2. claims: 17-25

A desorption process for the desorption of organic sulfur compounds from a formed faujasite zeolite, in particular formed zeolite 13X or formed zeolite LSX, or a mixture of formed zeolite 13X and formed zeolite LSX, wherein the desorption is done by a heating profile allowing the organic sulfur compounds to reach their equilibrium adsorption capacity at each temperature.

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0511885	A	04-11-1992	FR 2675712 A1 AT 124884 T DE 69203379 D1 DE 69203379 T2 DK 511885 T3 EP 0511885 A1 ES 2074840 T3 GR 3017600 T3	30-10-1992 15-07-1995 17-08-1995 04-04-1996 27-11-1995 04-11-1992 16-09-1995 31-01-1996
WO 0071249	A	30-11-2000	AU 5130500 A WO 0071249 A1 US 2002009404 A1	12-12-2000 30-11-2000 24-01-2002
US 6096194	A	01-08-2000	AU 3272701 A WO 0139878 A2	12-06-2001 07-06-2001
US 5057473	A	15-10-1991	NONE	
SU 1274746	A	07-12-1986	SU 1274746 A1	07-12-1986
WO 0067898	A	16-11-2000	AU 4534000 A AU 5965599 A WO 0067898 A1 WO 0067897 A1 CN 1288778 A ,B	21-11-2000 21-11-2000 16-11-2000 16-11-2000 28-03-2001
US 6103949	A	15-08-2000	US 5958818 A WO 9959720 A1	28-09-1999 25-11-1999
US 6264881	B1	24-07-2001	FR 2766475 A1 AT 236083 T AU 736403 B2 AU 8634998 A BR 9806072 A CA 2266385 A1 CN 1109653 B CZ 9901008 A3 DE 69812872 D1 DE 69812872 T2 DK 932581 T3 EA 1175 B1 EP 0932581 A1 ES 2195367 T3 WO 9905063 A1 HU 0004623 A2 JP 2001501166 T PL 332286 A1 PT 932581 T SK 36299 A3 TR 9900628 T1 TW 460411 B ZA 9806398 A	29-01-1999 15-04-2003 26-07-2001 16-02-1999 24-08-1999 04-02-1999 28-05-2003 15-12-1999 08-05-2003 08-01-2004 28-07-2003 30-10-2000 04-08-1999 01-12-2003 04-02-1999 28-04-2001 30-01-2001 30-08-1999 31-07-2003 10-12-1999 22-11-1999 21-10-2001 17-05-1999
WO 9603199	A	08-02-1996	WO 9603199 A1 AT 205742 T AU 7347294 A CA 2195683 A1 DE 69428375 D1	08-02-1996 15-10-2001 22-02-1996 08-02-1996 25-10-2001

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International Application No
PCT/IB 03/02541

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9603199	A		EP 0783362 A1	16-07-1997
			JP 10505536 T	02-06-1998
			RU 2127631 C1	20-03-1999
			SG 28472 A1	01-04-1996
			US 5609842 A	11-03-1997
DE 3705624	A	01-09-1988	DE 3705624 A1	01-09-1988
US 4404118	A	13-09-1983	AU 553729 B2	24-07-1986
			AU 9189482 A	26-04-1985
			CA 1188668 A1	11-06-1985
			DE 3269913 D1	17-04-1986
			EP 0083203 A1	06-07-1983
			JP 1414740 C	10-12-1987
			JP 58159846 A	22-09-1983
			JP 62020848 B	09-05-1987
			MX 159026 A	11-04-1989
			NO 824377 A ,B,	29-06-1983
			NZ 202869 A	30-04-1985
SU 1611859	A	07-12-1990	SU 1611859 A1	07-12-1990
US 4098684	A	04-07-1978	CA 1104941 A1	14-07-1981